favorable one for the embryos than one containing only Na and Ca. The experiments on which this statement is based are tabulated below and can be compared with the earlier ones.

After	21	21	25	24	24	hours
in NaCl	.053125	.10625	.2125	.425	.85	per cent.
in $CaSO_4$	.0028125	.005625	.01125	.0225	.045	per cent.
in $MgCl_2$	.0053125	.010625	.02125	.0425	.085	per cent.
there were	15	15	15	15	12	survivors.

Time of acclimatization 120 hours.
Average strength of preparatory solution in Na .199 per cent.
Average strength of preparatory solution in Ca .0105 per cent.
Average strength of preparatory solution in Mg .0199 per cent.

Conclusion.—The ability of amphibian eggs to develop in sea water is dependent on the principle of ionic antagonism. In addition to this, however, their power of acclimatiza- plays an important rôle, for it not only enables them to withstand the passage from dilute to strong solutions, but the opposite process as well. Thus larvæ which have just reached a point where they fail to react to tactile stimuli in solutions which do not bring about dehydration, either because the solutions are too weak, or because the larvæ have been acclimated, will if transferred to fresh or distilled water recover in from one to two hours. If in addition to this we remember that the species found by Pearse is probably racially acclimated to the conditions under which it lives, his findings do not appear inexplicable.

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July 15, 1912

THE SCALES OF DERMOPHIS

IN SCIENCE, July 28, 1911, p. 127, I described the scales of the Asiatic amphibian *Ichthyophis,* pointing out their resemblance to certain fish scales. Early this year my wife and Mr. Earl Morris obtained a number of amphibians and reptiles at Quirigua, Guatemala,[1] and among them a specimen of the Cœciliid amphibian *Dermophis mexicanus* Peters. The scales of this animal are minute, oblong to suboval, superficially similar to those of *Ichthyophis.* The essential structure is also the same, but the cell-like areas, instead of being more or less brick-shaped, are long and narrow, usually pointed at the ends, as though compressed. The scales of *Ichthyophis* are finely granular, but *Dermophis* shows little of this. The structure of the *Dermophis* scale is even more like that of the eel *Synaphobranchus pinnatus* than is that of *Ichthyophis.*

On the whole, the correspondence in minute structure between the scales of the two Cœciliids examined, from opposite sides of the world, is very striking. It is evident that in the Cœciliids, as well as in the more primitive types of scaly fishes, scale-structure is extremely persistent. It is proper to say, however, that the two genera are otherwise rather close in structure, and it remains to be seen whether the scales of more divergent genera, such as *Cryptopsophis* or *Gymnophis,* present any marked differences.

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[1] These were very kindly determined for us by Dr. L. Stejneger. It may be worth while to give the list, as a contribution to the knowledge of their distribution: *Leptophis mexicanus* (Dum. & Bibr.), *Streptophorus atratus sebæ* (Dum. &

MINERAL CONTENT OF VOLANIC ASHES FROM KODIAK[1]

FOLLOWING the recent eruption from Mount Katmai (the first week of June, 1912) samples of the volcanic débris falling near the Agri- Bibr.), *Ameiva undulata* Gray, *Bufo valliceps* Weigm., *Hyla baudinii* Dum. & Bibr., *Dermophis mexicanus* Peters, *Spelerpes* (? *rufescens* Cope, condition poor).

[1] Published by permission of the Secretary of Agriculture.

cultural Experiment Station in Kodiak were collected.[2] The samples here described were submitted to this bureau through the Office of Experiment Stations and a mineralogical examination of them was made.

Sample No. I. is light in color and rather coarse. It represents the first fall, which reached a depth of about six inches. There are present indeterminable feldspars, a slight amount of muscovite and a few apatite inclusions. Glass constitutes the larger part of the mass. The refractive index of this glass is below 1.50, thus indicating that the silica content is above 72.65 per cent.

Sample No. II. represents the second fall which reached about three or four inches in depth. It is reddish in color. The minerals present are hornblende, indeterminable feldspars, and biotite. Glass with the refractive index below 1.50 predominates. Some of the glass particles, however, had an index above 1.50. Obviously the material in the second fall is more basic than that of the first fall.

Sample No. III. represents the last fall, is light in color and very finely divided. Indeterminable feldspars, muscovite, and a few indeterminable particles of what appear to be some ferro-magnesian mineral are present. Glass with index below 1.50 predominates. Apparently the material in the last fall is between the first and second as regards basicity, *i. e.*, chemical composition.

These three mineralogical analyses indicate that the ashes were derived from a magma agreeing fairly well in composition with a granite magma. The silica content of three granites taken more or less at random from Washington[3] are as follows: (1) 72.48 per cent., (2) 76.91 per cent., (3) 74.40 per cent. The refractive index of the glass in these falls at Kodiak shows a silica percentage greater than 72.65, which makes the glass of the samples correspond very nearly in silica content with granite. The silica content of three obsidians, also taken from Washington, are as follows: (1) 75.52 per cent., (2) 76.68 per cent., (3) 76.20 per cent. These also agree fairly well with the silica content of the glassy part of the ash.

The analyses also indicate that a partial differentiation had taken place in the magma. Sample No. II. contains both hornblende and biotite which are not present in sample No. I. Moreover the index of some of the glass particles in No. II. indicates a lower silica content than is the case of the glass of the first and third falls.

As compared with ordinary soil material these falls are distinguished mainly by the high content of glass. There is every reason to anticipate that these glasses, as well as the definite minerals, would dissolve, hydrolize, and behave as would ordinary soil minerals. In fact the glasses would probably react with the soil water more rapidly than crystalline components of the soil.

No substances deleterious to plant growth were revealed by the examination, and on the whole these falls will probably serve ultimately as an enrichment of the preexisting soil, although it by no means follows that the immediate effects will be satisfactory.

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[2] For a general description of this eruption see "Volcanoes of Alaska," *The National Geographic Magazine*, Vol. XXIII., p. 824, 1912.

[3] U. S. Geol. Surv., Professional Paper 14, 1903.

SOCIETIES AND ACADEMIES

THE AMERICAN MATHEMATICAL SOCIETY

The one hundred and sixtieth regular meeting of the American Mathematical Society was held at Columbia University on Saturday, October 26, extending through the usual morning and afternoon sessions. Fifty-two members were in attendance. Among those present were Professors Emile Borel, of the University of Paris, and Vito Volterra, of the University of Rome.

Vice-president Taber occupied the chair. The council announced the election of the following persons to membership in the society: Dr. Henry Blumberg, Brooklyn, N. Y.; Mr. J. M. Colaw, Monterey, Va.; Dr. F. M. Morgan, Dartmouth College; Dr. Louis O'Shaughnessy, University of Pennsylvania; Dr. C. T. Sullivan, McGill University.

Luncheon was served at the university. In the